



# Catalyst 6500 Series 24-Port FXS Analog Interface Module Installation Note

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## Product Numbers: WS-X6624-FXS

This publication describes how to install the Catalyst 6500 series 24-port Foreign Exchange Station (FXS) analog interface module. The FXS interfaces connect directly to standard analog telephones or fax machines.

## Contents

This publication consists of the following sections:

- [Safety Overview, page 2](#)
- [Features, page 5](#)
- [Front Panel Description, page 9](#)
- [Specifications, page 10](#)
- [Installing the 24-Port FXS Analog Interface Module, page 11](#)
- [Connecting a Cable to the 24-Port FXS Analog Interface Module Port, page 15](#)
- [What to Do After Installing the 24-Port FXS Analog Interface Module, page 16](#)
- [Regulatory Standards Compliance, page 17](#)
- [Obtaining Documentation, page 17](#)
- [Obtaining Technical Assistance, page 19](#)

The FXS interfaces supply ring voltage, dial tone, and other services as described in this publication.

FXS ports emulate the central office (CO) or private branch exchange (PBX) in that they provide a service to an analog telephone or fax machine. The telephone or fax machine behaves as if it is connected to a normal CO or PBX line.



Note

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All signaling configuration is done through Cisco CallManager. Refer to the Cisco CallManager documentation for complete configuration details.

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# Safety Overview

Safety warnings appear throughout this publication in procedures that may harm you if performed incorrectly. A warning symbol precedes each warning statement.



**Note**

For a complete description of safety and compliance requirements, refer to the *Regulatory Compliance and Safety Information for the Calyst 6500 Series Switches* document.



**Warning**

## IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. To see translations of the warnings that appear in this publication, refer to the translated safety warnings that accompanied this device.

### Note: SAVE THESE INSTRUCTIONS

**Note:** This documentation is to be used in conjunction with the specific product installation guide that shipped with the product. Please refer to the Installation Guide, Configuration Guide, or other enclosed additional documentation for further details.

**Waarschuwing**

## BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Voor een vertaling van de waarschuwingen die in deze publicatie verschijnen, dient u de vertaalde veiligheidswaarschuwingen te raadplegen die bij dit apparaat worden geleverd.

### Opmerking BEWAAR DEZE INSTRUCTIES.

**Opmerking** Deze documentatie dient gebruikt te worden in combinatie met de installatiehandleiding voor het specifieke product die bij het product wordt geleverd. Raadpleeg de installatiehandleiding, configuratiehandleiding of andere verdere ingesloten documentatie voor meer informatie.

**Varoitus**

## TÄRKEITÄ TURVALLISUUTEEN LIITTYVIÄ OHJEITA

Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista. Tässä asiakirjassa esitettyjen varoitusten käänökset löydät laitteen mukana toimitetuista ohjeista.

### Huomautus SÄILYTÄ NÄMÄ OHJEET

**Huomautus** Tämä asiakirja on tarkoitettu käytettäväksi yhdessä tuotteen mukana tulleen asennusoppaan kanssa. Katso lisätietoja asennusoppasta, kokoonpano-oppaasta ja muista mukana toimitetuista asiakirjoista.

**Attention IMPORTANTES INFORMATIONS DE SÉCURITÉ**

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions d'avertissements figurant dans cette publication, consultez les consignes de sécurité traduites qui accompagnent cet appareil.

**Remarque CONSERVEZ CES INFORMATIONS**

Remarque Cette documentation doit être utilisée avec le guide spécifique d'installation du produit qui accompagne ce dernier. Veuillez vous reporter au Guide d'installation, au Guide de configuration, ou à toute autre documentation jointe pour de plus amples renseignements.

**Warnung WICHTIGE SICHERHEITSANWEISUNGEN**

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewusst. Übersetzungen der in dieser Veröffentlichung enthaltenen Warnhinweise sind im Lieferumfang des Geräts enthalten.

**Hinweis BEWAHREN SIE DIESE SICHERHEITSANWEISUNGEN AUF**

Hinweis Dieses Handbuch ist zum Gebrauch in Verbindung mit dem Installationshandbuch für Ihr Gerät bestimmt, das dem Gerät beiliegt. Entnehmen Sie bitte alle weiteren Informationen dem Handbuch (Installations- oder Konfigurationshandbuch o. Ä.) für Ihr spezifisches Gerät.

**Figyelem! FONTOS BIZTONSÁGI ELŐÍRÁSOK**

Ez a figyelmezető jel veszélyre utal. Sérülésveszélyt rejtő helyzetben van. Mielőtt bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplő figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található.

**Megjegyzés ÖRIZZE MEG EZEKET AZ UTASÍTÁSOKAT!**

Megjegyzés Ezt a dokumentációt a készülékhez mellékelt üzembe helyezési útmutatóval együtt kell használni. További tudnivalók a mellékelt Üzembe helyezési útmutatóban (Installation Guide), Konfigurációs útmutatóban (Configuration Guide) vagy más dokumentumban találhatók.

**Avvertenza IMPORTANTI ISTRUZIONI SULLA SICUREZZA**

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Per le traduzioni delle avvertenze riportate in questo documento, vedere le avvertenze di sicurezza che accompagnano questo dispositivo.

**Nota CONSERVARE QUESTE ISTRUZIONI**

Nota La presente documentazione va usata congiuntamente alla guida di installazione specifica spedita con il prodotto. Per maggiori informazioni, consultare la Guida all'installazione, la Guida alla configurazione o altra documentazione acclusa.

**Advarsel VIKTIGE SIKKERHETSINSTRUKSJONER**

Dette varselssymbolet betyr fare. Du befinner deg i en situasjon som kan forårsake personskade. Før du utfører arbeid med utstyret, bør du være oppmerksom på farene som er forbundet med elektriske kretssystemer, og du bør være kjent med vanlig praksis for å unngå ulykker. For å se oversettelser av advarslene i denne publikasjonen, se de oversatte sikkerhetsvarslene som følger med denne enheten.

**Merk TA VARE PÅ DISSE INSTRUKSJONENE**

Merk Denne dokumentasjonen skal brukes i forbindelse med den spesifikke installasjonsveiledningen som fulgte med produktet. Vennligst se installasjonsveiledningen, konfigureringsveiledningen eller annen vedlagt tilleggsdokumentasjon for detaljer.

**Aviso INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

Este símbolo de aviso significa perigo. O utilizador encontra-se numa situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha em atenção os perigos envolvidos no manuseamento de circuitos eléctricos e familiarize-se com as práticas habituais de prevenção de acidentes. Para ver traduções dos avisos incluídos nesta publicação, consulte os avisos de segurança traduzidos que acompanham este dispositivo.

**Nota GUARDE ESTAS INSTRUÇÕES**

Nota Esta documentação destina-se a ser utilizada em conjunto com o manual de instalação incluído com o produto específico. Consulte o manual de instalação, o manual de configuração ou outra documentação adicional inclusa, para obter mais informações.

**¡Advertencia! INSTRUCCIONES IMPORTANTES DE SEGURIDAD**

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Vea las traducciones de las advertencias que acompañan a este dispositivo.

**Nota GUARDE ESTAS INSTRUCCIONES**

Nota Esta documentación está pensada para ser utilizada con la guía de instalación del producto que lo acompaña. Si necesita más detalles, consulte la Guía de instalación, la Guía de configuración o cualquier documentación adicional adjunta.

**Varning! VIKTIGA SÄKERHETSANVISNINGAR**

Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Se översättningarna av de varningsmeddelanden som finns i denna publikation, och se de översatta säkerhetsvarningarna som medföljer denna anordning.

**OBS! SPARA DESSA ANVISNINGAR**

OBS! Denna dokumentation ska användas i samband med den specifika produktinstallationshandbok som medfölje produkten. Se installationshandboken, konfigurationshandboken eller annan bifogad ytterligare dokumentation för närmare detaljer.

**Предупреждение ВАЖНЫЕ СВЕДЕНИЯ ПО БЕЗОПАСНОСТИ**

Этот символ предупреждает о наличии опасности. При неправильных действиях возможно получение травм. Перед началом работы с любым оборудованием необходимо ознакомиться с ситуациями, в которых возможно поражение электротоком, и со стандартными действиями для предотвращения несчастных случаев. Переведенный текст предупреждений содержится в соответствующем документе, поставляемом вместе с устройством.

**Примечание СОХРАНЯЙТЕ ЭТУ ИНСТРУКЦИЮ**

**Примечание** Эта инструкция должна использоваться вместе с руководством по установке конкретного изделия, входящим в комплект поставки. Дополнительные сведения см. в руководстве по установке, руководстве по настройке и другой документации, поставляемой с изделием.

**警告 有关安全的重要说明**

这个警告符号指有危险。您所处的环境可能使身体受伤。操作设备前必须意识到电流的危险性，务必熟悉操作标准，以防发生事故。如果需要了解本说明中出现的警告符号的译文，请参阅本装置所附之安全警告译文。

**注意 保存这些说明**

**注意** 本文件应与本产品附带的具体安装说明一并阅读。如欲了解详情，请参阅《安装说明》、《配置说明》或所附的其他文件。

**警告 安全上の重要な注意事項**

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止対策に留意してください。このマニュアルに記載されている警告の各國語版は、装置に付属の「Translated Safety Warnings」を参照してください。

**注 これらの注意事項を保管しておいてください。**

**注** この資料は、製品に付属のインストレーション ガイドと併用してください。詳細は、インストレーション ガイド、コンフィギュレーション ガイド、または添付されているその他のマニュアルを参照してください。

## Features

Features unique to the 24-port FXS analog interface module features are listed in [Table 1](#). Features that the 24-port FXS analog interface module shares with other Catalyst 6500 modules are described in the following sections:

- [Hot Swapping, page 8](#)
- [Power Management, page 8](#)
- [Environmental Monitoring, page 9](#)

**Table 1 24-Port Analog Interface Module Features**

Digital Signal Processing per Port
G.711, G.729, G.729A voice encoding
Silence suppression and voice activity detection
Comfort noise generation
Ringer, software programmable frequency and cadence, based on country
Dual tone multifrequency (DTMF) detection
Signaling, loop start
Modem detection
Line echo cancellation (32 ms)
Impedance (600 ohms)
Programmable analog gain, signaling timers
SPAN or port mirroring support
FXS Interface Features
Address signaling formats: In-band DTMF
Signaling formats: Loop start
Ringing tone: Programmable
Ringing voltage: Programmable, based on country
Ringing frequency: Programmable, based on country
Distance: 500 ohms maximum loop

Fax and modem transport parameters are listed in [Table 2](#).

**Table 2 Fax and Modem Transport Parameters**

Parameter Name	Description	Default
Fax relay enable	Enables/disables fax relay support in the gateway. Enabling this parameter will result in the gateway attempting fax relay negotiation as part of the call setup. If it is enabled but the far end does not support fax relay, the fax call will switch to pass-through mode.	Checkbox checked
Fax error correction mode (ECM) override	ECM is a feature present in some higher-end fax models that enables fax pages to be transmitted error free. If ECM is enabled, the transmission has a low tolerance to jitter and packet loss. This results in a higher number of failed fax calls. For better reliability (even with higher packet loss), ECM needs to be disabled. ECM is disabled by enabling the checkbox.	Checkbox checked
Maximum fax rate	Defines the maximum fax transmission rate to be used during the fax call. This can be used to restrict the bandwidth utilized for fax transmission.	14400

**Table 2 Fax and Modem Transport Parameters (continued)**

Fax payload size	Configures the size of the fax payload (fax data) carried over real-time transport protocol (RTP). The value can range between 20 and 48.	20
Non standard facilities country code	Overrides the country code passed by the fax machine with the value defined. Setting the value to default (65535) results in the gateway passing the country code values received from the fax machine to the far end. If the value is not the default, then the gateway will pass the configured value as the country code to the far end. It will suppress the actual country code passed by the fax machine. Country code can be received by the gateway from the far end through ISDN. For details about the nonstandard facilities country code, refer to the T.35 specification.	65535
Non standard facilities vendor code	Overrides the vendor/provider code passed by the fax machine with the value defined. Setting the value to default (65535) results in the gateway passing the vendor code values received from the fax machine to the far end. If the value is not the default, the gateway passes the configured value as the vendor code to the far end. It will suppress the actual vendor code passed by the fax machine. The vendor code can be received by the gateway from the far end through ISDN. For details about the nonstandard facilities vendor code, refer to the T.35 specification.	65535
Fax/Modem Packet Redundancy	Enables packet redundancy support for fax and modem calls. Packet redundancy support results in retransmission of packets in case of problems. Enabling redundancy can have a negative impact on performance.	Checkbox unchecked
V.21 Flag Sequence Detection Count	Specifies the number of V.21 flag sequences that need to be detected in order to determine that an incoming fax tone is valid. Increase this value when there are line disturbances that require the gateway to wait for a longer period of time to confirm a fax call.	4
Port Used for Voice Calls	Optimizes the performance of voice calls. If this parameter is enabled and the parameters for modem and fax calls are disabled, the port is configured to accept only voice calls. Enable this parameter only if you are certain that a port will handle voice calls only.	Checkbox checked

**Table 2 Fax and Modem Transport Parameters (continued)**

Port Used for Modem Calls	Optimizes the performance of modem calls. If this parameter is enabled and the parameters for voice and fax calls are disabled, the port is configured to accept only modem calls. Enabling this parameter improves the performance of the port by reducing or removing the switchover time required to move from voice mode to modem mode. Enable this parameter only if you are certain that a port will handle modem calls only	<input checked="" type="checkbox"/>
Enabled Port Used for Fax Calls	Optimizes the performance of fax calls. If this parameter is enabled and the parameters for voice and modem calls are disabled, the port is configured to accept only fax calls. Enabling this parameter improves the performance of the port by reducing or removing the switchover time required to move from voice mode to fax mode. Enable this parameter only if you are certain that a port will handlefax calls only	<input checked="" type="checkbox"/>
Named service event (NSE) type	NSE type attempts to standardize the transfer of tones over real-time transport protocol (RTP). Two NSE standards exist in Cisco products: one for Cisco IOS gateways and one for non-Cisco IOS gateways. The Catalyst 6500 Series Switch 8-port T1/E1 PSTN interface module supports both standards. You need to configure the right NSE type based on the network setup. If the module needs to talk to a Cisco IOS gateway (a VG200 or AS5300 for example), set this option to IOS Gateway. If the gateways need to talk to other non-Cisco IOS gateways (such as a WS-X6608-E1/T1, VG248, or another WS-X6624-FXS), set this option to non-IOS Gateway.	Non-IOS Gateway

## Hot Swapping

Hot swapping lets you remove and replace the 24-port FXS analog interface module while the system is operating. When the system detects that a module has been installed or removed, it automatically runs diagnostic and discovery routines, acknowledges the presence or absence of the module, and resumes system operation without any user intervention.

## Power Management

Because the Catalyst 6500 series modules have different power requirements, certain switch configurations require more power than a single power supply can provide. Although the power management feature allows you to power all installed modules with two power supplies, redundancy is not supported in this configuration.

For detailed information on power management, refer to the *Catalyst 6500 Series Switch Software Configuration Guide*.

## Environmental Monitoring

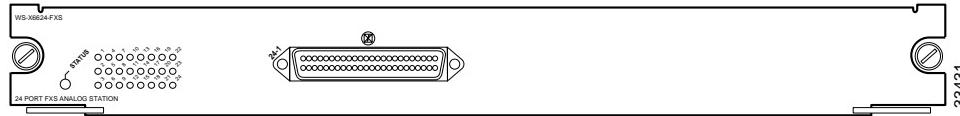
Environmental monitoring of chassis components provides early warning indications of possible component failure to ensure safe and reliable system operation and avoid network interruptions.

For detailed information on environmental monitoring, refer to the *Catalyst 6500 Series Switch Software Configuration Guide*.

## Front Panel Description

The 24-port FXS analog interface module front panel features are shown in [Figure 1](#) and are described in the following sections.

**Figure 1** 24-Port FXS Analog Interface Module



### Status LED

When the 24-port FXS analog interface module is powered up, it initializes various hardware components and communicates with the supervisor engine. The Status LED on the module is described in [Table 3](#).



**Note**

For detailed information on the supervisor engine LEDs, refer to the *Catalyst 6500 Series Switch Module Installation Guide*.

**Table 3** 24-Port FXS Analog Interface Module Status LED

Color	Description
Off	The module is waiting for the supervisor engine to grant power
	The module is not receiving power. Module was powered down due to lack of power (module listed as <i>power-deny</i> in the <b>show module</b> status field)
Red	The line card processor powered up, but is not running The line card processor detected a fatal error during its diagnostics Overtemperature condition (major threshold exceeded)

**Table 3 24-Port FXS Analog Interface Module Status LED**

Color	Description
Orange	The module is initializing hardware or communicating with the supervisor engine
	The supervisor engine has disabled the module
	The supervisor engine has sent a <b>SCP_SET_DIAG_FEATURES</b> message indicating that the diagnostics have failed
	Overtemperature condition (minor threshold exceeded)
Green	The module is operational; the supervisor engine has granted a <i>module online</i> status

## Link LEDs

The Link LEDs show port and link status for each of the 24 ports as described in [Table 4](#).

**Table 4 24-Port FXS Analog Interface Module Link LEDs**

LED	Color	Description
Link	Green	Telephone or fax machine is off-hook
	Yellow	Module or port disabled through CLI <sup>1</sup>
	Off	Port not active (connected device on-hook) or link is not connected

1. CLI = command-line interface.

## RJ-21 Connector

The RJ-21 connector on the module front panel allows you to attach 24 analog phones or fax machines to the system.

## Specifications

The 24-port FXS analog interface module physical specifications are listed in [Table 5](#).

**Table 5 24-Port FXS Analog Interface Module Specifications**

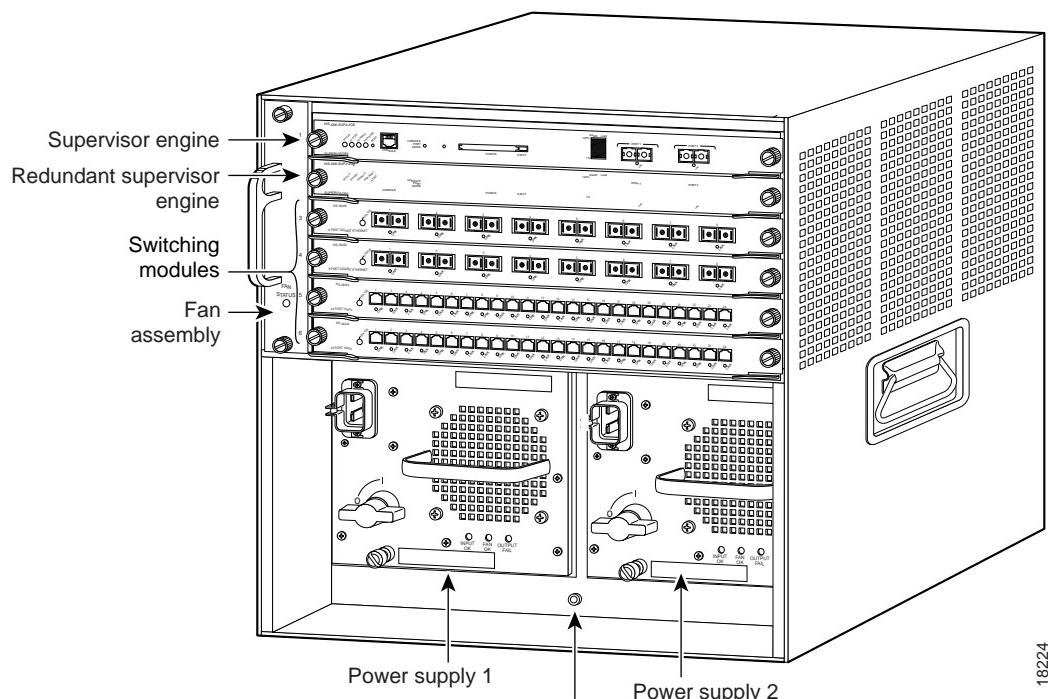
Specifications	Description
Environmental conditions	
Operating temperature	32 to 104°F (0 to 40°C)
Nonoperating temperature	-40 to 167°F (-40 to 75°C)
Humidity	10 to 90%, noncondensing

**Table 5 24-Port FXS Analog Interface Module Specifications (continued)**

Specifications	Description
Dimensions (H x W x D)	1.2 x 14.4 x 16 in. (30 x 356 x 406 mm)
Weight	Approximately 3 lb (1.36 kg)
Software requirements	Catalyst 6500 Series Switch supervisor engine software version 5.5 or later Cisco CallManager software release 3.0 or later

## Installing the 24-Port FXS Analog Interface Module

Slot 1 on the Catalyst 6500 Series Switch is reserved for the supervisor engine (see [Figure 2](#)). If you are using a redundant supervisor engine, it would go in slot 2; otherwise, slot 2 can be used for other modules. The 24-port FXS analog interface module can be installed in any of the other slots.

**Figure 2 Catalyst 6006/6506 Switch Chassis**

18224



**Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

The section is divided into the following topics:

- [Required Tools, page 12](#)
- [Removing Modules, page 12](#)
- [Installing Modules, page 13](#)

## Required Tools

These tools are required to install the 24-port FXS analog module in the Catalyst 6500 series switches:

- Number 1 and number 2 Phillips screwdrivers for the captive installation screws
- Antistatic mat or antistatic foam
- Wrist strap or other grounding device

## Removing Modules


**Caution**


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During this procedure, wear grounding wrist straps to avoid ESD damage to the module. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.

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**Caution**


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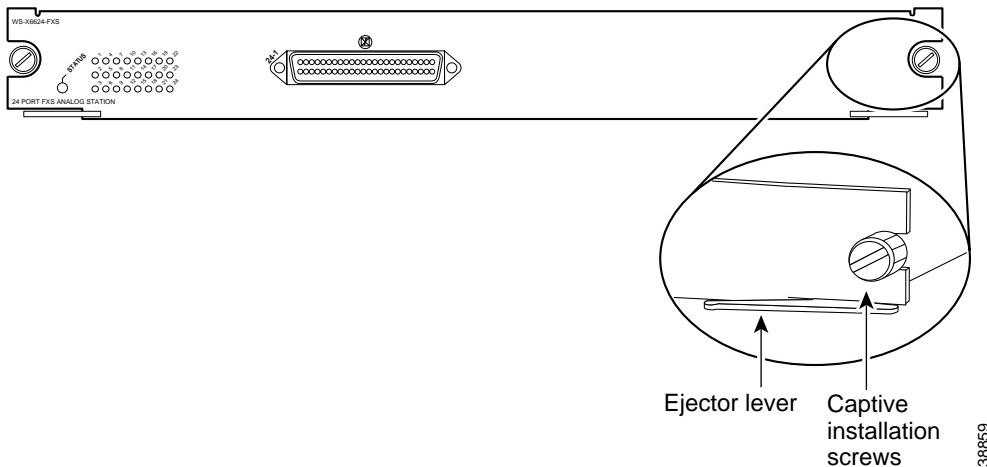
To prevent ESD damage, handle modules by the carrier edges only.

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To remove a module from a Catalyst 6500 Series Switch, perform these steps:

- Step 1** Disconnect any network interface cables attached to the ports on the module you intend to remove.
- Step 2** Loosen the captive installation screws, as shown in [Figure 3](#).

**Figure 3** *Ejector Levers and Captive Installation Screws*



3889

- Step 3** Grasp the left and right ejector levers and simultaneously pivot the levers outward to release the module from the backplane connector. [Figure 3](#) shows a close-up of the right ejector lever.
- Step 4** Grasp the module front panel with one hand and place your other hand under the carrier to support and guide it out of the slot. Do not touch the printed circuit boards or connector pins.
- Step 5** Carefully pull the module straight out of the slot, keeping your other hand under the carrier to guide it.
- Step 6** Place the module on an antistatic mat or antistatic foam, or immediately install it in another slot.

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- Step 7** If the slot is to remain empty, install a module filler plate (part number 800-00292-01) to keep dust out of the chassis, to maintain proper airflow through the module compartment, and to prevent exposure to hazardous voltages and current.
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**Warning**

**Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.**

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**Caution**

Before connecting system power or turning on the switch, ensure that the system is connected to a supplementary ground. For complete instructions on connecting the supplementary ground, refer to the *Catalyst 6500 Series Switch Installation Guide* publication.

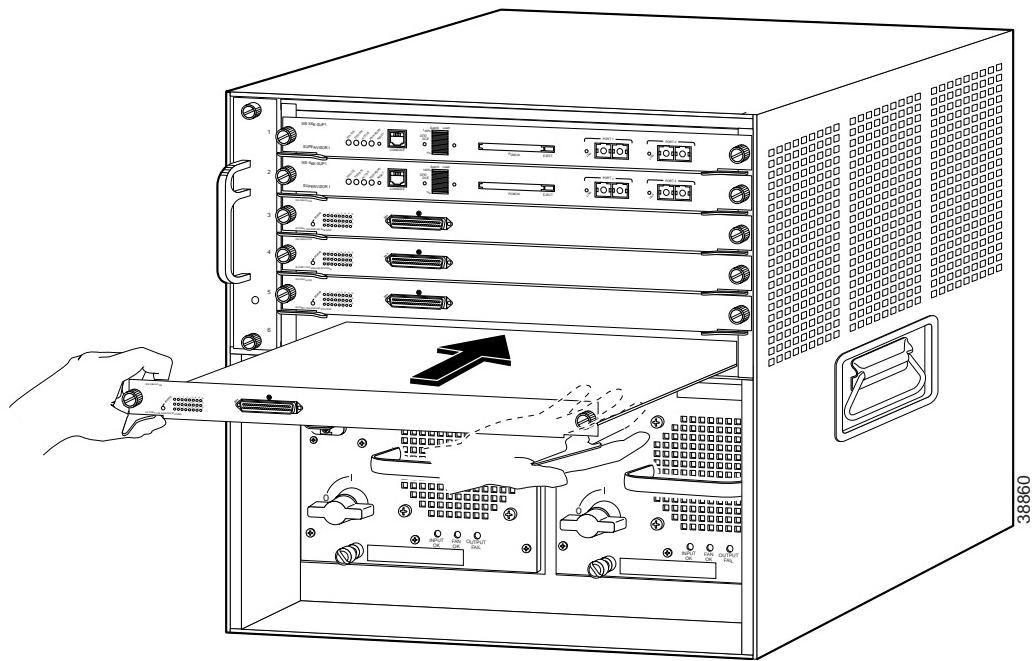
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## Installing Modules

Follow these steps to install the 24-port FXS analog interface module:

- 
- Step 1** Connect an ASCII terminal or a PC running terminal emulation software to the console port on the supervisor engine.
- Step 2** Choose a slot for the new FXS analog interface module. Ensure that you have enough clearance to accommodate any interface equipment that you will connect directly to the module ports. If possible, place modules between empty slots that contain only module filler plates.
- Step 3** Remove the module from its antistatic packaging.
- Step 4** Guide the module into the slot, aligning the sides of the module with the guides in the slot (see [Figure 4](#)). Avoid touching the components on the board.

**Figure 4** *Installing the FXS Module in the Chassis*



- Step 5** While keeping the module oriented horizontally, carefully slide it into the slot until its front panel contacts the ejector levers (see [Figure 3](#)).
- Step 6** Using the thumb and forefinger of each hand, simultaneously push the left lever and the right lever in to seat the module all the way into the backplane connector.



**Caution** Always use the ejector levers when installing or removing modules. A module that is partially seated in the backplane causes the system to halt.

- Step 7** Use a screwdriver to tighten the captive installation screws on the left and right sides of the module (see [Figure 3](#)).
- Step 8** Check the status of the module as follows:
- After the module has booted and run diagnostics, ensure that the module Status LED is green (module operational).
  - Enter the **show module** command at the Cat6000> prompt to verify that the system acknowledges the new module and reports it as ok in the screen display.

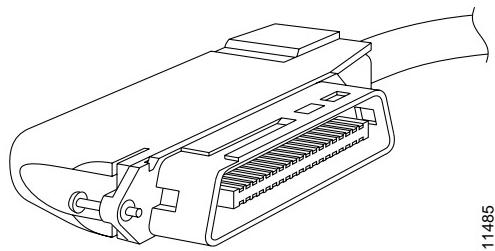
# Connecting a Cable to the 24-Port FXS Analog Interface Module Port


**Caution**

If the symbol of suitability with an overlaid cross (cross-hockey sticks symbol) appears above a port, you must not connect the port to a public network that follows the European Union standards. Connecting the port to this type of public network can cause severe injury or damage your switch.

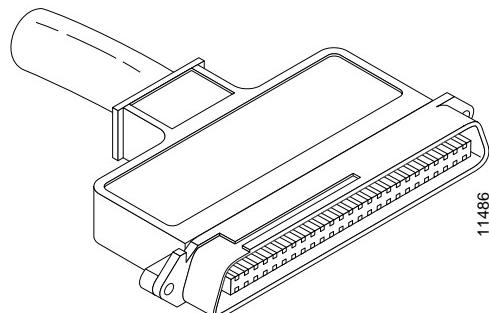
Use a standard RJ-21 Category 5 telco connector and cable to connect to the RJ-21 connector. Two types of RJ-21 connectors are shown in [Figure 5](#) and [Figure 6](#). A pinout for the module's RJ-21 connector is provided in [Table 6](#).

*Figure 5 RJ-21 Telco Interface 90-Degree Cable Connector*



11485

*Figure 6 RJ-21 Telco Interface 180-Degree Cable Connector*



11486

*Table 6 RJ-21 Connector Pinout*

Port Number	Connector Pin Number	Signal	Port Number	Connector Pin Number	Signal
1	1 26	Ring Tip	13	13 38	Ring Tip
2	2 27	Ring Tip	14	14 39	Ring Tip
3	3 28	Ring Tip	15	15 40	Ring Tip
4	4 29	Ring Tip	16	16 41	Ring Tip

**Table 6 RJ-21 Connector Pinout (continued)**

Port Number	Connector Pin Number	Signal	Port Number	Connector Pin Number	Signal
5	5 30	Ring Tip	17	17 42	Ring Tip
6	6 31	Ring Tip	18	18 43	Ring Tip
7	7 32	Ring Tip	19	19 44	Ring Tip
8	8 33	Ring Tip	20	20 45	Ring Tip
9	9 34	Ring Tip	21	21 46	Ring Tip
10	10 35	Ring Tip	22	22 47	Ring Tip
11	11 36	Ring Tip	23	23 48	Ring Tip
12	12 37	Ring Tip	24	24 49	Ring Tip
–	–	–	–	25, 50, 51, 52	GND

## What to Do After Installing the 24-Port FXS Analog Interface Module

After you have installed the 24-port FXS analog interface module, refer to the *Catalyst 6500 Series Switch Software Configuration Guide* for complete configuration details. Note that all signaling configuration is done through Cisco CallManager; refer to the most recent version of Cisco CallManager documentation for configuration instructions.

# Regulatory Standards Compliance

Catalyst 6500 Series Switch modules, when installed in a system, comply with the standards listed in [Table 7](#).

**Table 7      Catalyst 6500 Series Switch Regulatory Compliance Specifications**

Agency Approvals	Specification
<b>Compliance</b>	CE <sup>1</sup> Marking
<b>Safety</b>	UL <sup>2</sup> 1950, CSA <sup>3</sup> -C22.2 No. 950, EN <sup>4</sup> 60950, IEC <sup>5</sup> 950, TS <sup>6</sup> 001, AS/NZS <sup>7</sup> 3260
<b>EMC<sup>8</sup></b>	FCC <sup>9</sup> Part 15 (CFR <sup>10</sup> 47) Class A, ICES <sup>11</sup> -003 Class A, EN55022 Class A, CISPR22 Class A, AS/NZS 3548 Class A, and VCCI Class A with UTP <sup>12</sup> cables EN55022 Class B, CISPR22 Class B, AS/NZS 3548 Class B, and VCCI <sup>13</sup> Class B with FTP <sup>14</sup> cables

1. CE = European Compliance.
2. UL = Underwriters Laboratory.
3. CSA = Canadian Standards Association.
4. EN = European Norm.
5. IEC = International Electrotechnical Commission.
6. TS = Technical Specification.
7. AS/NZS = Standards Australia/Standards New Zealand.
8. EMC = electromagnetic compatibility.
9. FCC = Federal Communications Commission.
10. CFR = Code of Federal Regulations.
11. ICES = Interference-Causing Equipment Standard.
12. UTP = unshielded twisted-pair.
13. VCCI = Voluntary Control Council for Information Technology Equipment.
14. FTP = foil twisted-pair.

## Obtaining Documentation

Cisco provides several ways to obtain documentation, technical assistance, and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

### Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

<http://www.cisco.com/univercd/home/home.htm>

You can access the Cisco website at this URL:

<http://www.cisco.com>

International Cisco websites can be accessed from this URL:

[http://www.cisco.com/public/countries\\_languages.shtml](http://www.cisco.com/public/countries_languages.shtml)

## Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which may have shipped with your product. The Documentation CD-ROM is updated regularly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual or quarterly subscription.

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[http://www.cisco.com/en/US/partner/ordering/ordering\\_place\\_order\\_ordering\\_tool\\_launch.html](http://www.cisco.com/en/US/partner/ordering/ordering_place_order_ordering_tool_launch.html)

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You can find instructions for ordering documentation at this URL:

[http://www.cisco.com/univercd/cc/td/doc/es\\_inpck/pdi.htm](http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm)

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Networking Products MarketPlace:  
<http://www.cisco.com/en/US/partner/ordering/index.shtml>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, U.S.A.) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

## Documentation Feedback

You can submit comments electronically on Cisco.com. On the Cisco Documentation home page, click **Feedback** at the top of the page.

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Cisco Systems  
Attn: Customer Document Ordering  
170 West Tasman Drive  
San Jose, CA 95134-9883

We appreciate your comments.

# Obtaining Technical Assistance

Cisco provides Cisco.com, which includes the Cisco Technical Assistance Center (TAC) website, as a starting point for all technical assistance. Customers and partners can obtain online documentation, troubleshooting tips, and sample configurations from the Cisco TAC website. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC website, including TAC tools and utilities.

## Cisco.com

Cisco.com offers a suite of interactive, networked services that let you access Cisco information, networking solutions, services, programs, and resources at any time, from anywhere in the world.

Cisco.com provides a broad range of features and services to help you with these tasks:

- Streamline business processes and improve productivity
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To obtain customized information and service, you can self-register on Cisco.com at this URL:

<http://tools.cisco.com/RPF/register/register.do>

## Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available: the Cisco TAC website and the Cisco TAC Escalation Center. The type of support that you choose depends on the priority of the problem and the conditions stated in service contracts, when applicable.

We categorize Cisco TAC inquiries according to urgency:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration. There is little or no impact to your business operations.
- Priority level 3 (P3)—Operational performance of the network is impaired, but most business operations remain functional. You and Cisco are willing to commit resources during normal business hours to restore service to satisfactory levels.
- Priority level 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operations are negatively impacted by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.
- Priority level 1 (P1)—An existing network is “down,” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

## Cisco TAC Website

The Cisco TAC website provides online documents and tools to help troubleshoot and resolve technical issues with Cisco products and technologies. To access the Cisco TAC website, go to this URL:

<http://www.cisco.com/tac>

All customers, partners, and resellers who have a valid Cisco service contract have complete access to the technical support resources on the Cisco TAC website. Some services on the Cisco TAC website require a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to this URL to register:

<http://tools.cisco.com/RPF/register/register.do>

If you are a Cisco.com registered user, and you cannot resolve your technical issues by using the Cisco TAC website, you can open a case online at this URL:

<http://www.cisco.com/tac/caseopen>

If you have Internet access, we recommend that you open P3 and P4 cases online so that you can fully describe the situation and attach any necessary files.

## Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses priority level 1 or priority level 2 issues. These classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer automatically opens a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to this URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

Before calling, please check with your network operations center to determine the Cisco support services to which your company is entitled: for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). When you call the center, please have available your service agreement number and your product serial number.

# Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The *Cisco Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the *Cisco Product Catalog* at this URL:  
[http://www.cisco.com/en/US/products/products\\_catalog\\_links\\_launch.html](http://www.cisco.com/en/US/products/products_catalog_links_launch.html)
- Cisco Press publishes a wide range of networking publications. Cisco suggests these titles for new and experienced users: *Internetworking Terms and Acronyms Dictionary*, *Internetworking Technology Handbook*, *Internetworking Troubleshooting Guide*, and the *Internetworking Design Guide*. For current Cisco Press titles and other information, go to Cisco Press online at this URL:  
<http://www.ciscopress.com>

- *Packet* magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access *Packet* magazine at this URL:  
<http://www.cisco.com/go/packet>
- iQ Magazine is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:  
<http://www.cisco.com/go/iqmagazine>
- Internet Protocol Journal is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:  
[http://www.cisco.com/en/US/about/ac123/ac147/about\\_cisco\\_the\\_internet\\_protocol\\_journal.html](http://www.cisco.com/en/US/about/ac123/ac147/about_cisco_the_internet_protocol_journal.html)
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